

Interim Analysis of COVID-19 cases in Montana (as of 12/3/2021)

This report is an interim epidemiological review of COVID-19 cases in Montana. Data are analyzed based on information available as of December 3, 2021. Current case count at the time of analysis is:

Case Count = 192,537

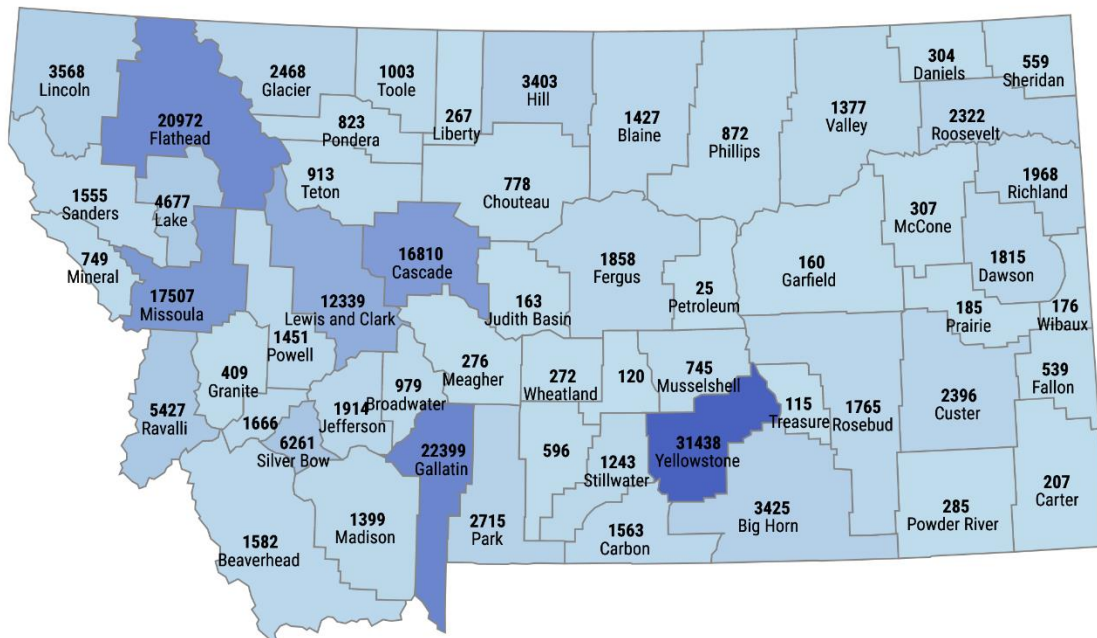
This report is completed using data that is available during the time of analysis and there may be a delay between current case count and this report, due to rapidly changing updates. When data is limited to available information, number of cases included in analysis is indicated in graphs.

Geographic Distribution

There are 192,537 cases of COVID-19 reported from all 56 counties in Montana. Most cases are reported in more populous counties. Yellowstone County and Gallatin County are the most impacted to date, reporting 16% and 12% of all reported cases, respectively. Flathead (11%), Missoula (9%), and Cascade (9%) counties also report more than 15,000 cases each (Figure 1).

Figure 1: Map of Reported Montana COVID-19 cases*

Reported COVID-19 Cases in Montana as of 12/3/2021

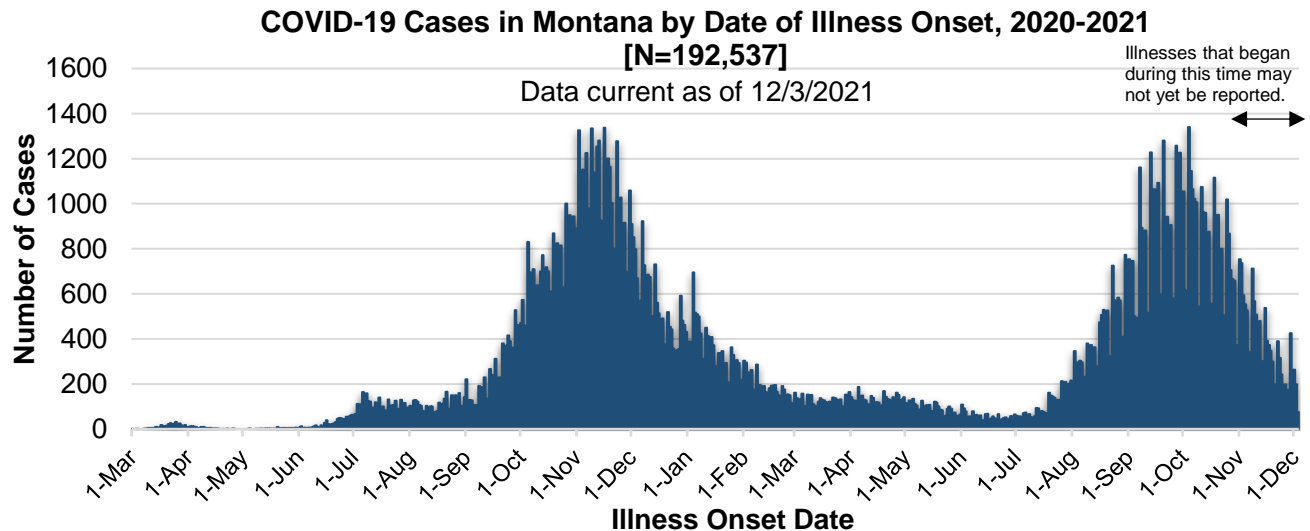


*Cases reported on the map initially included residents of other states who were tested and isolated in Montana. As COVID-19 is widespread across the United States, the map does not include out-of-state residents who test positive in Montana to align with CSTE residency guidelines that classify cases by the individual's state of residence. This is standard practice for all communicable diseases to ensure accurate data for Montana.

Epidemiological Data

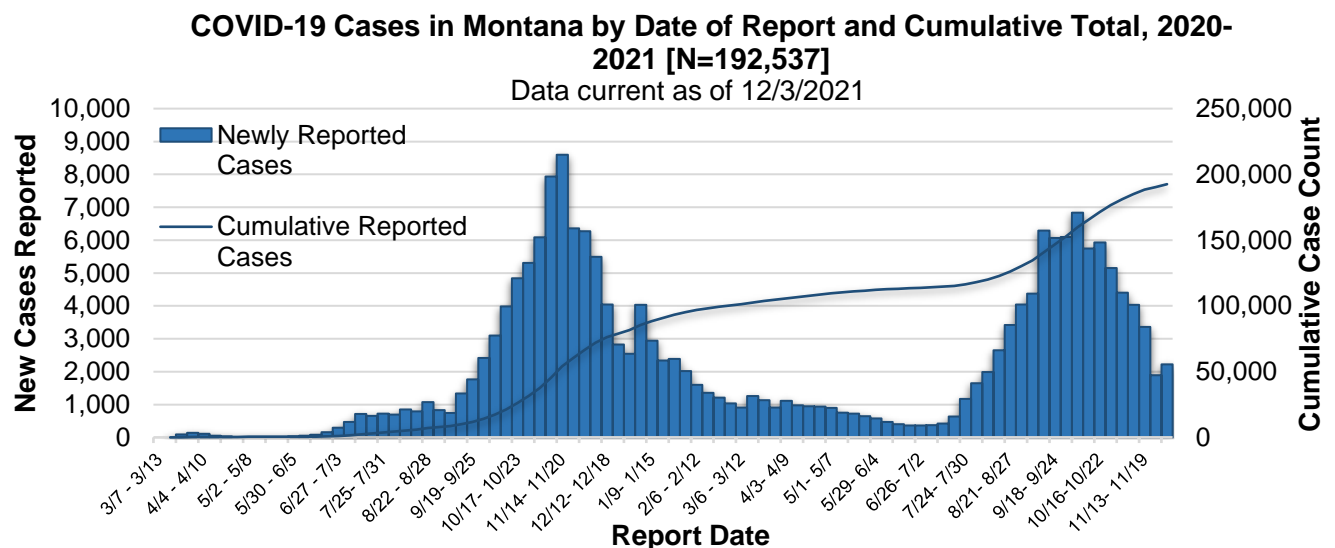
A total of 192,537 COVID-19 cases were reported in Montana as of 12/3/2021. Illness onset date is used when available. When onset date is not available, collection date is used to calculate an estimated onset date (Figure 2). Illness onsets that occurred within the past 10 days may not yet be reported due to lag time between illness onset, seeking healthcare for testing, and receiving test results.

Figure 2: Epi Curve for Montana COVID-19 cases



The first COVID-19 case in Montana was reported on 3/11/2020 (Figure 3). An early peak occurred in late March 2020 and then subsided. By June, case reports grew again and peaked in November when weekly new cases averaged 7,000 new reports. Early in 2021, case reports slowly declined over time. By July 2021, case reports began to increase again until peaking in early October. Weekly case reports since then have dropped, averaging 2,000 new cases weekly in the last two weeks.

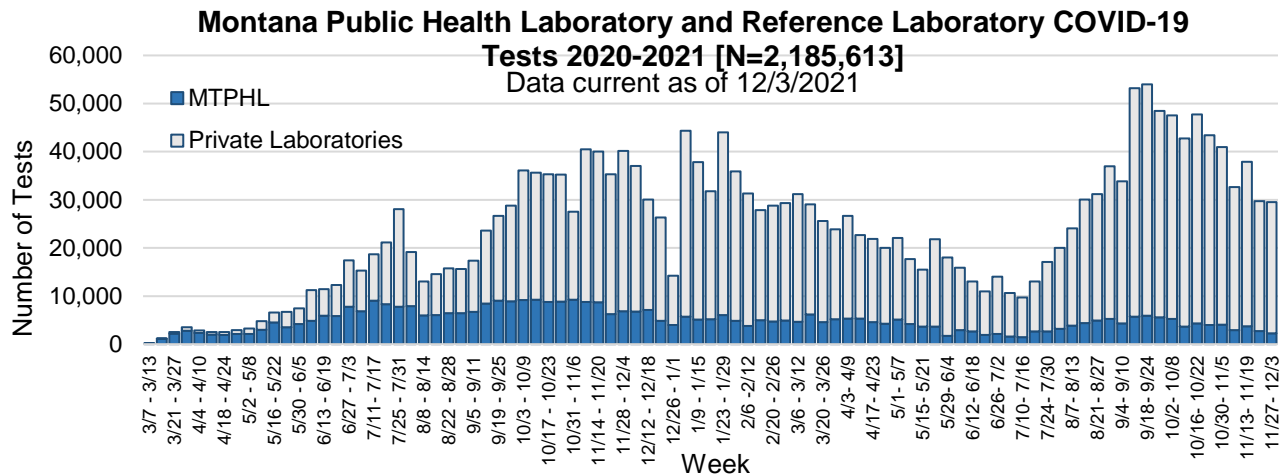
Figure 3: Cumulative reported cases for COVID-19 in Montana



Laboratory Data

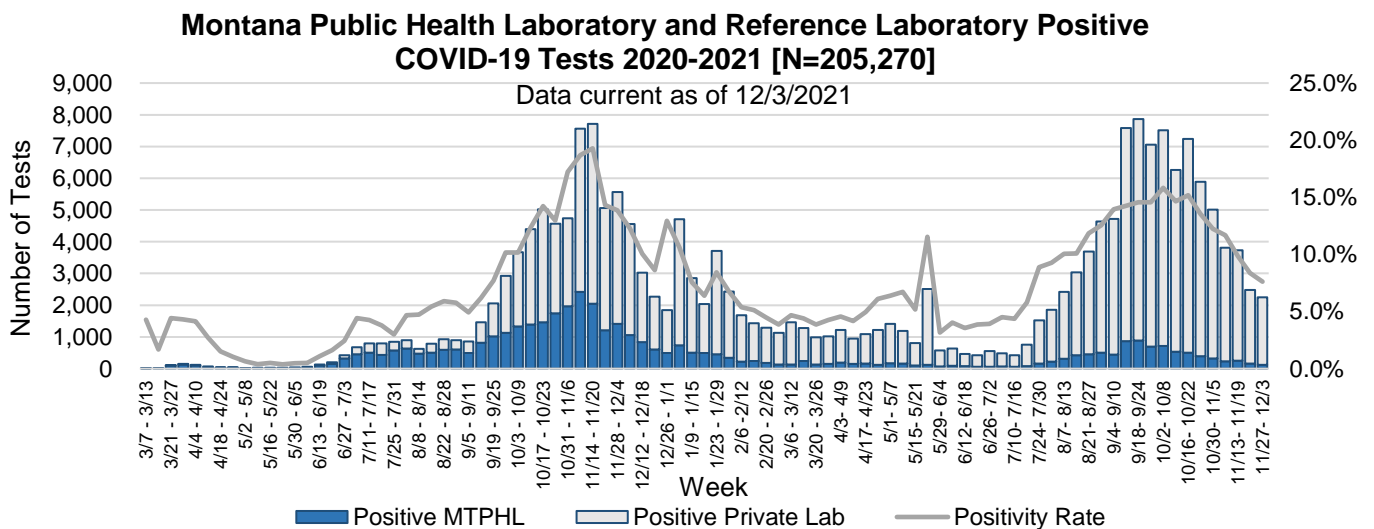
COVID-19 testing was initially available solely through the CDC. COVID-19 PCR testing capability was implemented by the Montana Public Health Laboratory (MTPHL) on March 9, 2020. Private laboratories began implementing COVID-19 testing in the weeks following. Private laboratories include reference laboratories and those in smaller hospital labs performing point-of-care (POC) testing. A total of 2,185,613 tests have been completed to date. In November 2021, an average of 34,000 tests were completed weekly (Figure 4). An average of 45,000 COVID tests were conducted weekly in October 2021.

Figure 4: Total Laboratory Testing for COVID-19 in Montana



To date, 205,270 positive tests have been resulted through MTPHL and private laboratories. The overall positivity rate for all laboratory testing to date is about 9.4% and has varied over time, from a low of <1% in May 2020 to a high of 19% in mid-November 2020. Average positivity has declined in 2021, averaging 4% during most weeks in early 2021* and was as high as 16% in fall 2021 during the peak (Figure 5).

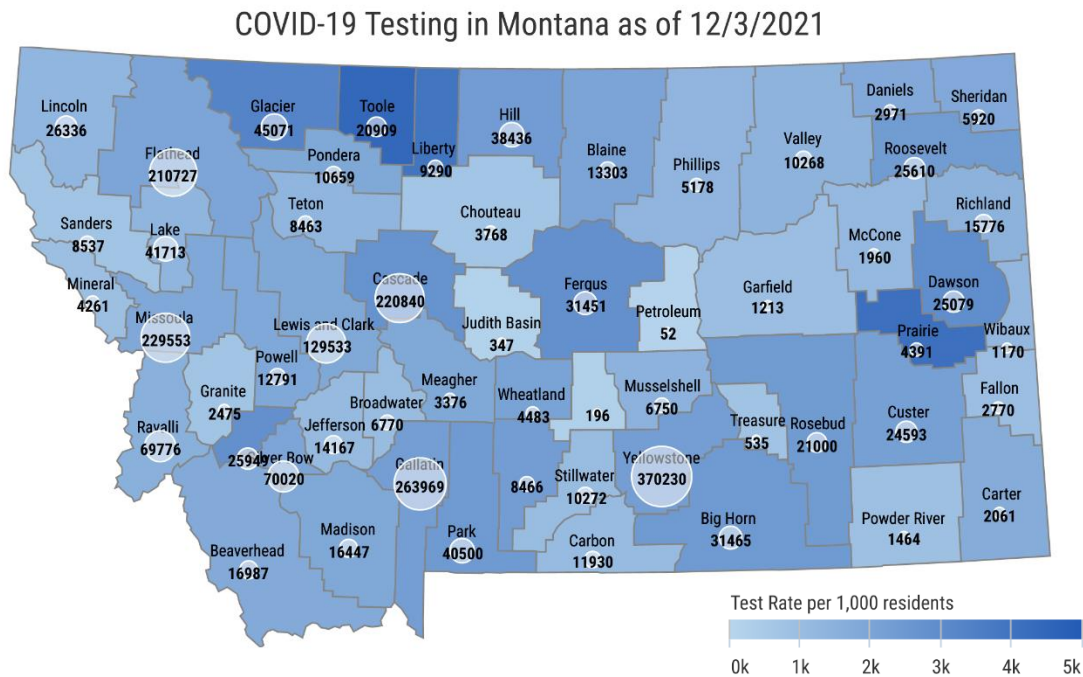
Figure 5: Positive Laboratory Tests for COVID-19 in Montana



*Please note, the increase in positivity for week ending 5/28 was a result of reporting lag during which previously missing positive laboratory reports had been migrated into the reporting system.

Of all COVID-19 tests conducted in Montana, most were from persons tested in Yellowstone County (17%), followed by Gallatin (12%), Missoula (10%), Flathead (10%), and Cascade (10%) counties (Figure 6). Lab testing data is displayed for county of residence when known. When county of residence is unknown, the county of the facility collecting the test was used. Positive case reports are reflected in Figure 1 and are always counted by county of residence.

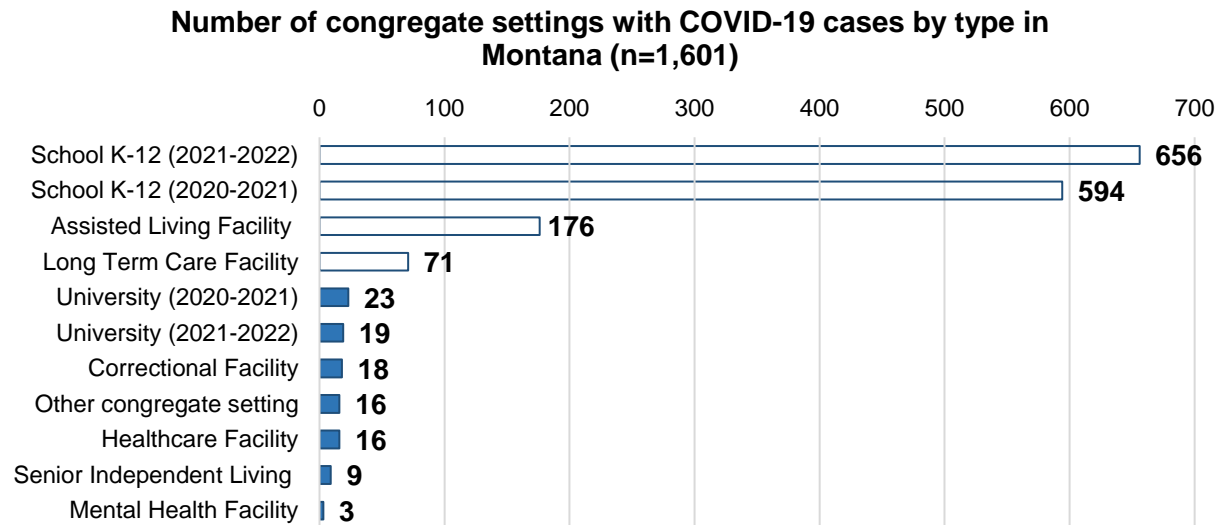
Figure 6: COVID-19 Total Tests and Test Rate in Montana



Congregate Settings

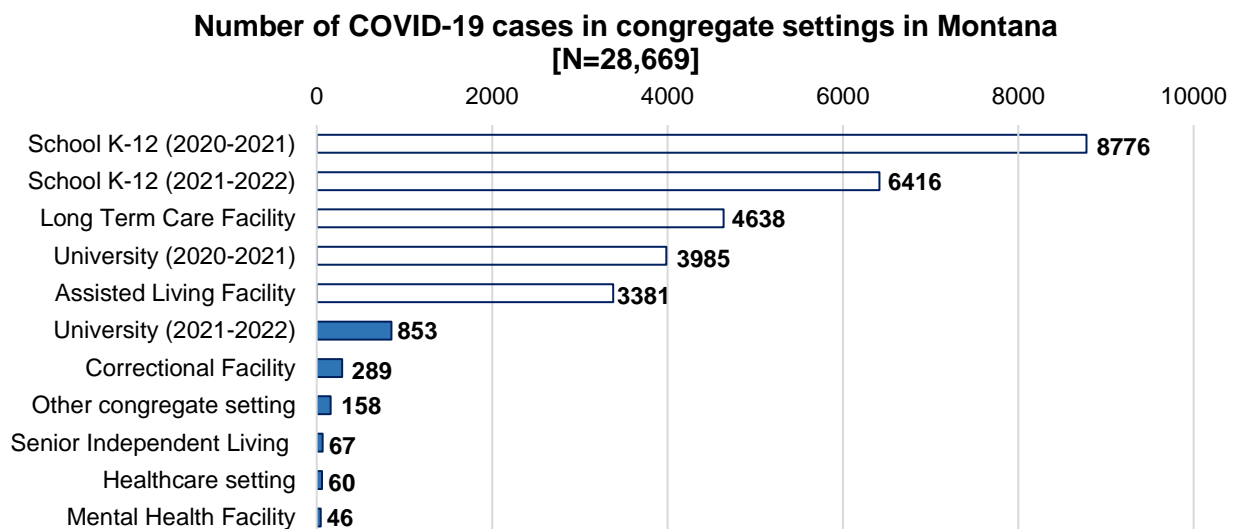
A congregate setting is an environment where a number of people reside, meet, or gather in close proximity for either a limited or extended period of time. Examples of congregate settings include homeless shelters, group homes, prisons, detention centers, schools, and workplaces. There are 1,601 congregate settings in Montana that have experienced a COVID-19 outbreak. Most outbreaks occur in schools, assisted living facilities (ALF) and long-term care facilities (LTCF), but outbreaks in other settings, such as correctional facilities, group homes, and mental health facilities have been reported (Figure 8).

Figure 8: Type and number of congregate settings experiencing a COVID-19 outbreak in Montana



A total of 28,669 cases can be attributed to outbreaks at congregate setting; most of them are residents, meaning people who reside at these locations (i.e. residents, inmates, students) versus staff, who frequent these settings as employees (i.e. nursing staff, jailors, teachers) (Figure 9).

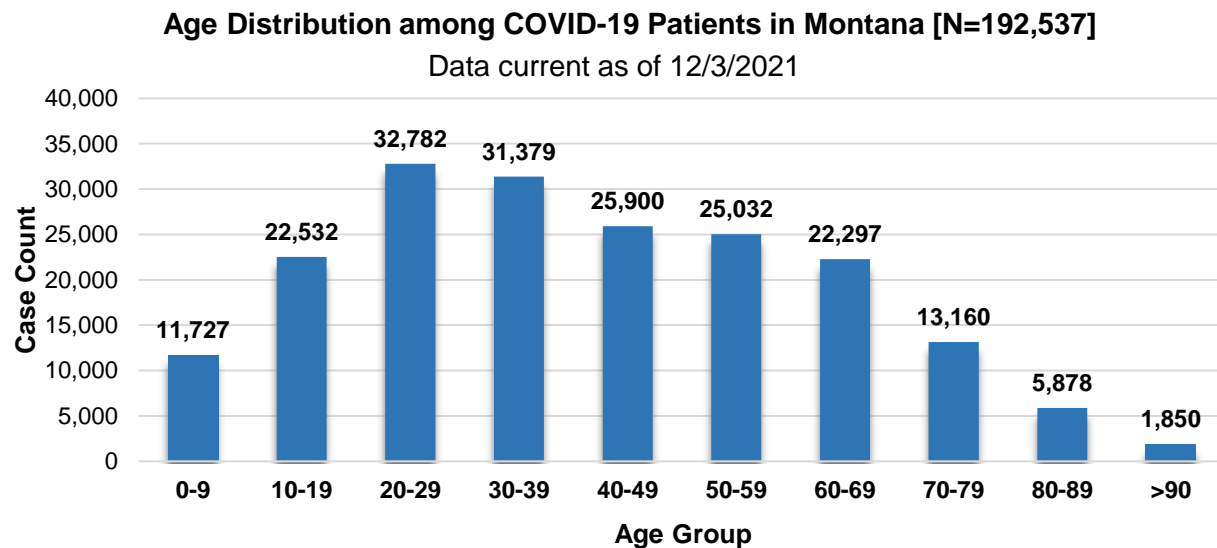
Figure 9: Number of COVID-19 residents and staff by type of congregate setting in Montana



Age and Demographic Distribution

To date, persons between 20-29 years of age account for 17% of all reported COVID-19 cases in Montana. The next most common age group is 30-39 years (16%), followed by 40-49 (13%) and 50-59 years (13%) (Figure 10). The median age for all cases is 39 years of age (range: <1-110 years). Fifty percent of cases are between 24-58 years of age.

Figure 10: Age Distribution for COVID-19 cases in Montana



Persons infected with COVID-19 are somewhat equally distributed among men and women, with 52% of cases reported as female and 48% reported as male. Of 156,014 (81%) persons with known race at the time of report, 80% identify as white and 8% as American Indian or Alaska Native. Other race was listed by 10% of persons, and less than 1% identified as either Black or African American, Asian, Native Hawaiian, or Pacific Islander each (Table 1). Ninety-seven percent of all persons with ethnicity information available (n=131,693) identify as non-Hispanic or Latino and three percent as Hispanic or Latino. Native Americans make up about 7% of Montana's population, but represent 8% of reported COVID-19 cases in the state.

Table 1: Race of COVID-19 Cases in Montana (N=89,856)

Race	Count	Percent
White	125,296	80%
American Indian or Alaska Native	13,065	8%
Native Hawaiian, Pacific Islander	254	<1%
Asian	640	<1%
Black or African American	907	<1%
Other	15,852	10%
TOTAL	156,014	

Transmission Characteristics

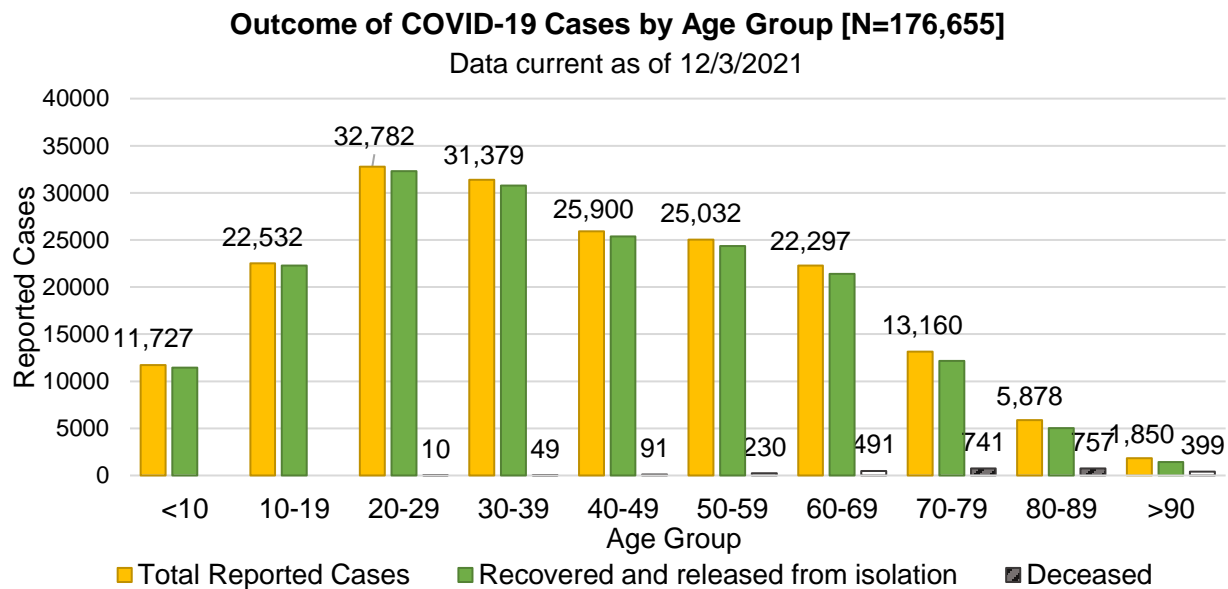
Data on disease transmission of recently diagnosed persons is limited, as the highest priority during case investigation is case follow up, contact tracing, and gathering essential information on cases. Data on disease transmission, particularly on supportive information such as exposure information and

underlying conditions, are available when enough resources allow for additional data entry. Transmission data is currently available for 46% of reported cases; about half of these cases were identified as a contact to another confirmed COVID-19 case. No exposure was identified for approximately one out of four (26%) cases. At the time of the report, one out of seven (15%) persons reported a workplace exposure. These exposures are not mutually exclusive and do not directly determine where infection was acquired, but rather provide a broad overview of activities that nearly half of COVID-19 patients describe during the period of time they likely were infected with COVID-19.

Outcomes

The current outcomes of COVID-19 cases in Montana depict the impact of the illness on the population. There are currently 3,241 (1.7%) persons actively infected and 186,528 (96.9%) persons who have recovered, meaning they have cleared acute illness and are released from isolation (Figure 11). There are 2,768 (1.4%) persons infected with COVID-19 who have died. Persons who died were between 20 and 103 years of age, with a median age of 76 years old. Fifty-seven percent were male. For those who died, and race was known (n=2,685), 2,115 (79%) were white, 323 (12%) Native American and 230 (9%) as other race or multi-race. Less than 1% were Black or African American and less than 1% were Asian.

Figure 11: Current infections and illness outcomes for Montana COVID-19



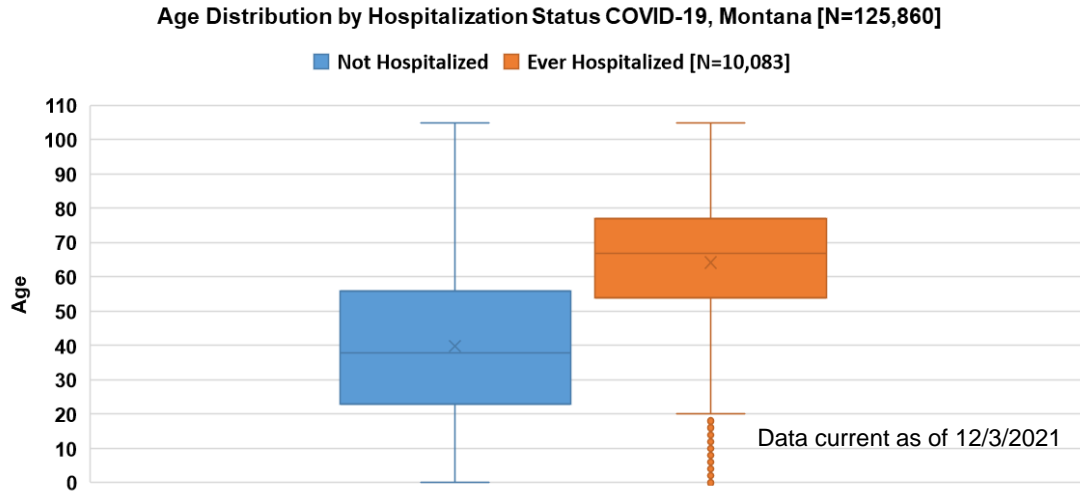
Persons who required hospitalization for COVID-19 are generally much older than those not requiring hospitalization (Figure 12). To date, 10,083 persons have been hospitalized with a median age of 67 years; half of them are between 54 and 77 years old. Those who did not require hospitalization have a median age of 38, and half of those cases are between 23 and 56 years old.

At the time of this report, information on pre-existing and underlying conditions was available for 67% of hospitalized patients. Of hospitalized patients with data available, 75% indicated they have at least one pre-existing condition. Hypertension (35%) and diabetes (24%) were the most common reported conditions. These conditions are not mutually exclusive.

At the time of this report, information on pre-existing and underlying conditions was available for 63% of deceased patients. Of those who died, and data was available, 78% indicated they had at least one

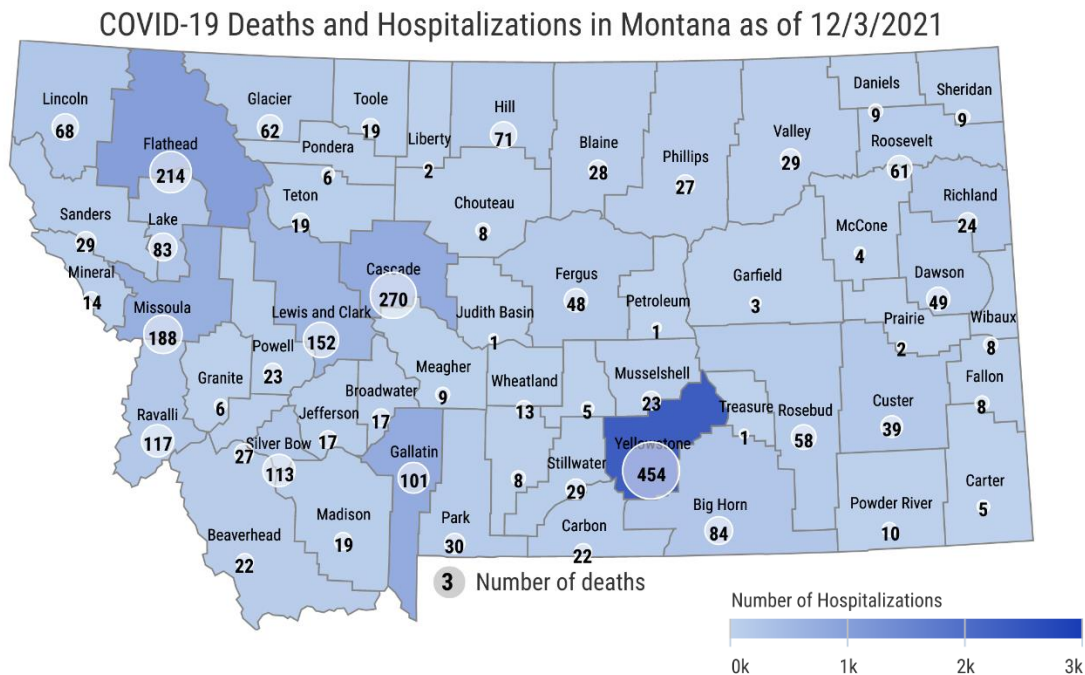
pre-existing condition. Hypertension was listed for 39% of deceased patients and diabetes was listed for 24% of patients. These conditions are not mutually exclusive.

Figure 12: Age Distribution among COVID-19 cases compared by known hospitalization status



Reports of hospitalizations and deaths vary by county. Yellowstone County has reported the most cases, hospitalizations, and deaths during the outbreak so far. Counties reporting 100 or more deaths include Yellowstone (454), Cascade (270), Flathead (214), Missoula (188), Lewis & Clark (152), Ravalli (117), Silver Bow (113), and Gallatin (101). Darker shading indicates higher number of persons hospitalized. Number of deaths reported by county are below (Figure 13).

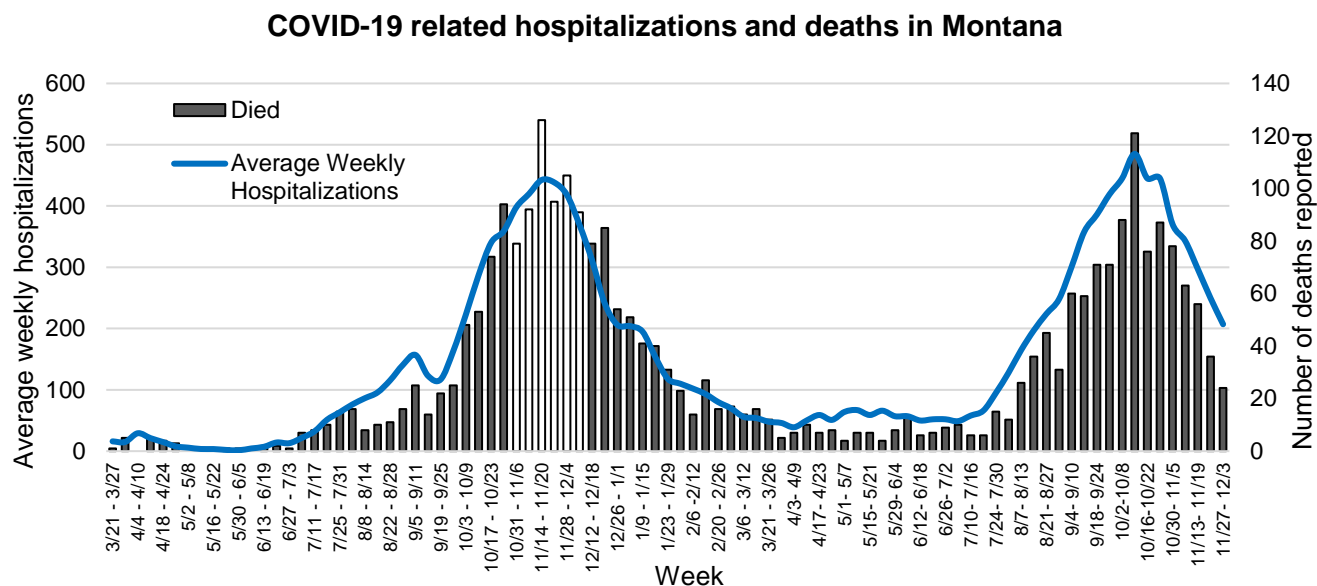
Figure 13: COVID-19 Hospitalizations and Deaths by County



The number of persons who have died increased with the surge of new cases in late 2020, and then declined during the first few months of 2021 as fewer new cases were reported (Figure 14). Data is

displayed by date of death. Average weekly hospitalizations due to COVID-19 reached a new peak in October 2021 – the previous peak was from November 2020.

Figure 14: Reported COVID-19 related hospitalizations and deaths over time



Breakthrough Infections

Data from COVID-19 vaccination studies suggest that the efficacy of COVID-19 vaccines in preventing COVID-19 infection is likely 90-95% or better. In simple terms, this would suggest that if 100 fully vaccinated individuals were exposed to COVID-19, five to ten would be expected to develop disease. However, the calculation is more detailed. Vaccine efficacy is calculated as a measurement of how much a vaccine lowers the risk of an outcome, and can vary by the particular vaccine studied, the study size, or expected outcome (e.g., prevention of infection vs. prevention of severe outcomes).

Breakthrough infection surveillance began on February 15, 2021. A breakthrough COVID-19 infection is defined as a positive SARS-CoV-2 RNA or antigen detected in a respiratory specimen that is collected ≥ 14 days after completing the primary COVID-19 vaccine series of an FDA-authorized COVID-19 vaccine. Depending on the specific vaccine administered, completion of series could be one or two doses of vaccine.

As of 12/7/21, Montana reports 15,236 cases of confirmed breakthrough disease, which includes 880 hospitalizations and 263 deaths. Over the past 8 weeks (October 9 – December 3) the number of cases among unvaccinated individuals was 4.0 times higher than the number of cases among vaccinated individuals; the number of hospitalizations and deaths among unvaccinated individuals were 4.1 and 3.1 times higher, respectively, compared to vaccinated individuals.

Hospitalizations and Deaths and Vaccination Status

Additionally, COVID-19-related hospitalization and death data from October 9 – December 3 (last 8 weeks) were analyzed to review vaccination status. Eighty percent of Montanans who were hospitalized

and 75% of those who died had not received a COVID-19 vaccine (Table 5). Of the 1,760 individuals who were hospitalized during this time period, 34 (2%) were <18 years old, 197 (11%) were 18 to 44 years old, 601 (34%) were 45 to 64 years old and 928 (53%) were >65 years old.

Table 2: Vaccination status of reported COVID-19 hospitalizations and deaths – October 9 – December 3

	HOSPITALIZATIONS	DEATHS
TOTAL REPORTED	1,760	373
UNVACCINATED	1,416 (80%)	281 (75%)
VACCINATED (BREAKTHROUGH CASE)	344 (20%)	92 (25%)
UNVACCINATED AGE RANGE IN YEARS (MEDIAN AGE)	<1-96 (64)	23-103 (70)
VACCINATED AGE RANGE IN YEARS (MEDIAN AGE)	17-101 (73)	20-101 (80)

COVID-19 Variant Trends

There were 7,734 samples from Montana that were sequenced and their lineages were reported to GISAID since September 2020; figure 5 displays the number of specimens sequenced by week. A variant is a lineage that has one or more mutations that differentiate it from other lineages in circulation. Currently, Delta and Omicron (B.1.1.529) is the only Variants of Concern circulating. **There have been no Omicron variants detected in Montana at this time.**

Of specimens collected and sequenced in the past two months, 2284/2288 (99%) are Delta. The overall trends in SARS-CoV-2 variants shows that, March through June 2021, the Alpha variant (light yellow) was predominant. Beginning in July 2021, the Delta variant (dark orange) became the dominant variant in Montana. The charts below reflect information on specimens that were sequenced and reported to GISAID.

Figure 15: Percent of COVID-19 Variants in Sequenced Samples by Collection Date, Montana

